



USER MANUAL - EMS RELATION

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<OVERVIEW>

<>EMS RELATION is a GUI tool that enables a EMS developer or department administrator to create, develop and debug sqlite tables (nomenclatures) as well as automate sqlite database object management in the convenient environment. This sqlite front-end provides utilities to compare, synchronize, and backup sqlite database with scheduling, and gives possibility to analyze and report sqlite tables data. It supports synchronization of nomenclatures with those in a centralized broker, when started in Network Communication Mode.

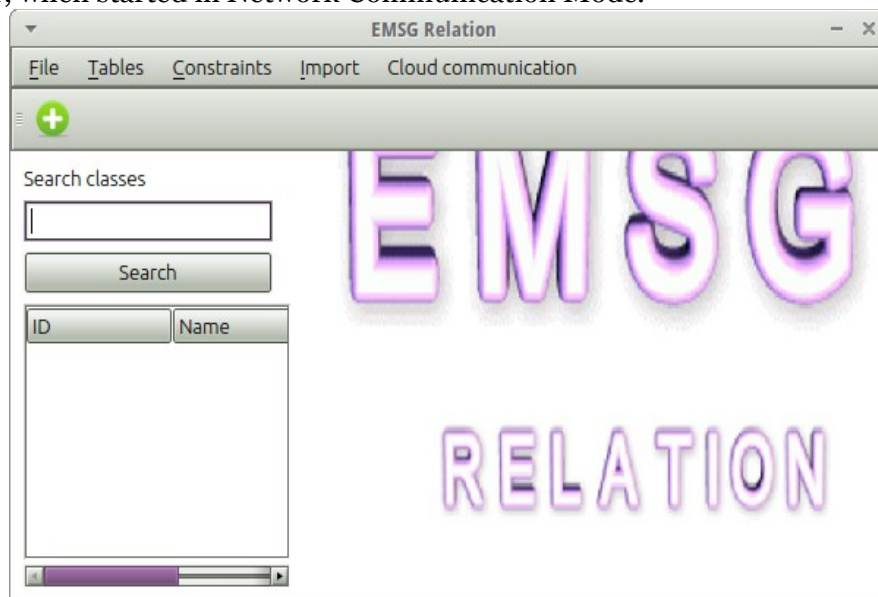


Figure 1: Main Screen of EMS Relation

Some of the supported features are:

- Version Control and Synchronization with EMS Broker
- Visual Table Data Management: insertion, deletion, update
- Visual Table Meta-data Management: -visual creation, add/remove column, constraint management
- Data import from text files
- Visual Classes Search Engine
- Cloud communication feature: Nomenclatures' synchronization

<VISUAL CLASSES SEARCH ENGINE>

<>The Classes Search Engine Module is intended to help the user to choose which class to use as a table column. The class name and class abbreviation of each class are searched and class matches are displayed.



Figure 2: Classes Search Engine

The Classes Search Engine is quite useful when called from within Create Table Visual Module to search classes for a table columns. By double clicking the most suitable class in the Classes Search Engine Results' pane , the class is automatically selected to be the class of the column.

<DATA IMPORT FROM TEXT FILE>



You can trigger the Data Import Module by clicking Import → Import Text Data from the menu. The dialog of the module appears.

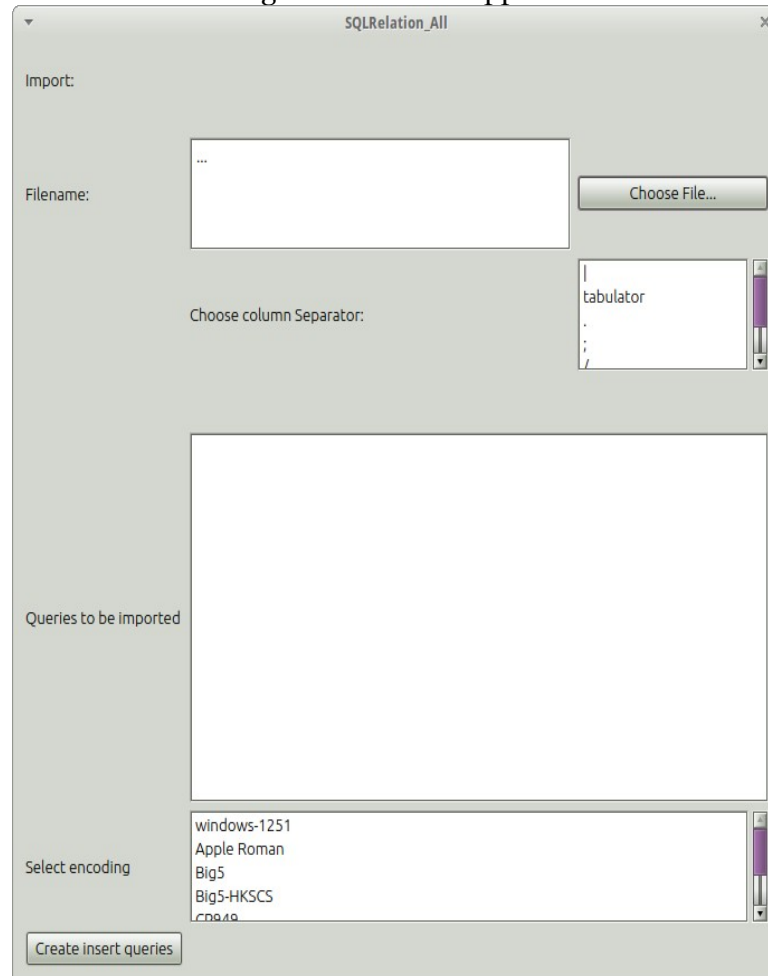


Figure 3: Data Import From Text File Dialog

Before using this functionality you should first create the table by using the Create Table dialog. If you intend to import data in the previously created table SEX, the text file with the import data must be named “SEX.dat”. By clicking

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Choose File... button, you can select the path to the file. Then you must choose the columns separator. The next obligate step is to select the encoding of the file.

For example if you created table sex with columns: SEX_TEXT, SEX_CODE:

<i>Table: SEX</i>
SEX_CODE
SEX_TEXT

Figure 4: Example import table

then you must change the order of the columns in the import file SEX.dat. An Example SEX.dat would be:

MALE|001

FEMALE|002

As you can see, the first column in the file is SEX_TEXT, and the second is SEX_CODE.

<TABLE CREATION>

<> You can access Visual Table Creation by clicking Tables → Create table menu item. Then a Create table dialog appears where you must enter the number of columns in the new table and table name. The table name must consist of only capital Latin letters and “_” symbol. When you have already entered the number of columns and table name, click “View Fields” Button.

A dialog like this appears:

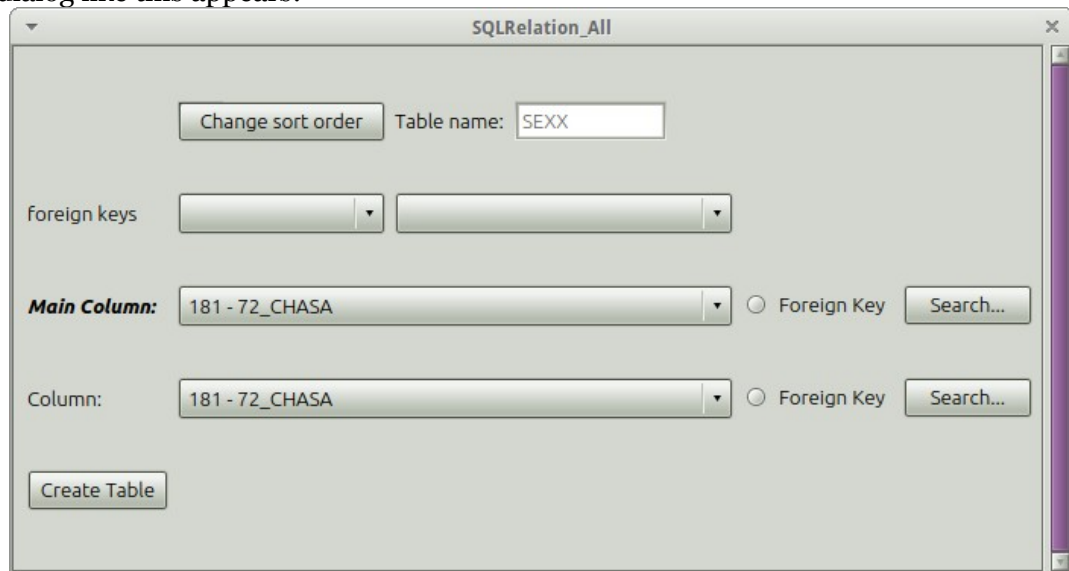


Figure 5: Create table dialog

For each column of the new nomenclature table, you should have an appropriate class already created with the Class Editor. It's quite convenient to use the Search Classes Module, by clicking “Search...” button on the rightmost side for each nomenclature column. The Main Column of a nomenclature table is the column that is going to contain the text of the combo items in the dossier's steps, if this table is used as a combo table in the combo item's class and this is specified by using the Class Editor.

You can specify that a column is a foreign key to an already created nomenclature table by clicking the column's “Foreign key” checkbox and then selecting the foreign key base table and its column, to which the foreign key points. It's a good practice to have the same class for the foreign key column of

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this table and the base column of the base table. If so, the combo of the base column will automatically select the column of the appropriate class in the base table.

You are not obliged to create the foreign key constraint right now. You can always add this constraint by using the constraint management pane later.

The hierarchical nomenclature sequence of tables: (for example: COUNTRIES, REGIONS, CITIES, STREETS) causes the insert/change/delete record dialog of this program to act accordingly. When you select Great Britain, and click Next, only the Regions of Great Britain will appear. This hierarchy is also observed automatically in the Client Runtime environment: If for example user has already selected the current Country from a Combo in the current step, or in a parent step, and whenever the user triggers the combo of regions, only regions in the selected country will appear.

<DROP TABLE>

<>The Drop Table Dialog is accessible by clicking Tables → Drop Table menu item.

A Drop Table Dialog appears:

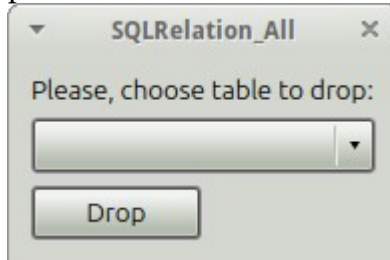


Figure 6: Drop Table Dialog

You must choose the table you want to drop and then click “Drop” button. There are some limitations for this operation. For instance you cannot drop a table that participates in a hierarchy as a parent table (a table that contains a base column to which a foreign key points) before first dropping the child table.

Another limitation, which is not strict is when the current table participates in a combo class as its table. If you delete such a nomenclature table it's quite possible to have problems displaying data in combos in steps designed to use this nomenclature table. Warnings of eventual problematic drop is displayed as soon as you select the table to be dropped from the combo.

<Add Column To Table>

<> If you want to add a column to an already created table click Tables → Add Column To Table menu item.

Then choose the table you want to alter by selecting it from the combo box. Then a pane similar to the following appears:



Figure 7: Add Column To Table Dialog

You can select the class of the new column of the table by clicking the lower combo box. The most convenient way, however is to click the “Search...” button to search classes by class id, class name, or class abbreviation. By double clicking the most appropriate found class, the combo automatically changes its current item to this class.

Click “Alter table” to add the column. If the nomenclature table has multiple records, the operation might take some time.

<REMOVE COLUMN FROM TABLE>

<>The Remove Column From Table Dialog is accessible by clicking the Table → Remove column from table Menu Item.

Then choose the table you want to alter by selecting it from the combo box. Then a pane similar to the following appears:

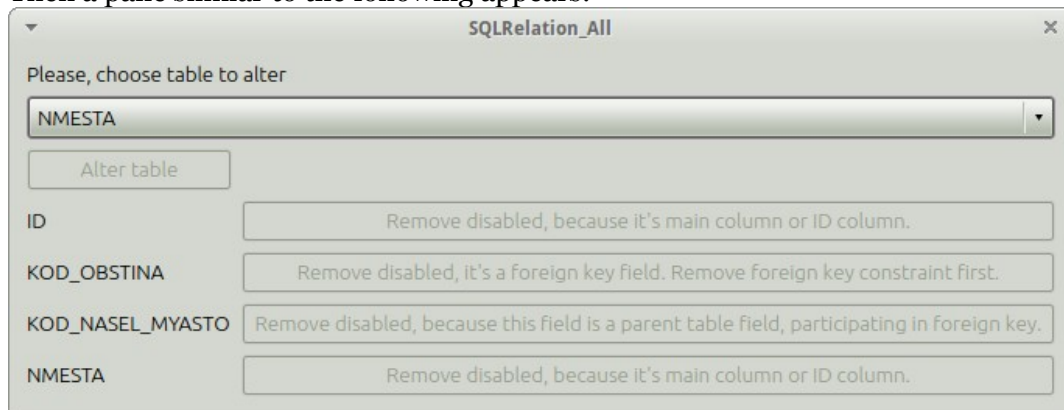


Figure 8: Remove Column From Table Dialog

There are some limitations of this operation. For example, you cannot remove the main ID column and the main column of the table, because this operation might affect the validity of data in some steps in some dossiers. If the table participates in a hierarchy and the column you want to remove is a child or a parent column in the hierarchy, you cannot remove it either. You must break the hierarchy first, by using the Constraints Management Dialog.

<CONSTRAINT MANAGEMENT>

<>The Constraint Management Pane is accessible by clicking the Constraints → Constraint Management Menu Item.

Then choose the table you want to alter by selecting it from the combo box. Then panes similar to the following appear:

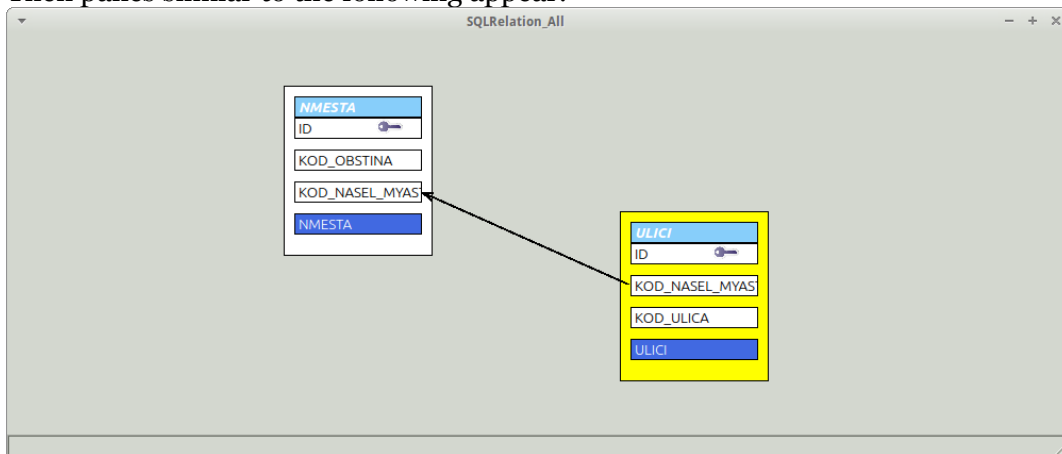


Figure 9: Graphical Relational Representation of Tables Dialog

The dialog box is titled "SQLRelation_All". It contains a section "Please, choose table." with a dropdown menu showing "ULICI". Below this is a button "Update unique constraints". The main section shows a table with columns: "column names", "UNIQUE", "Foreign key", and "Not Null". The table lists constraints for KOD_NASEL_MYASTO, KOD_ULICA, and ULICI. The ULICI row is checked for both "UNIQUE" and "Not Null" constraints. An "Add" button is present next to the "Not Null" column. A "Remove selected" button is at the bottom.

column names	UNIQUE	Foreign key	Not Null
KOD_NASEL_MYASTO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KOD_ULICA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ULICI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Figure 10: Constraint Management Dialog

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The types of constraints you can manipulate by the Constraint Management Dialog are “FOREIGN KEY”, “NOT NULL”, “UNIQUE”. For each constraint for the table, new constraint column in the dialog appears. As you can see in the example, there are 3 constraints for the table: UNIQUE column, FOREIGN KEY, NOT NULL for the column 'ULICI'. You can add a constraint by clicking the button Add. You then click the button of the constraint to change its type. Then you must specify the properties of the constraint. If the constraint is of type Foreign key, select the base table of the foreign key in the uppermost combo of the column. Then for the corresponding column of this table, ie the corresponding row of the dialog select the parent column of the foreign key constraint. If the constraint is NOT NULL or UNIQUE, then check the corresponding combo box or combination for the constraint. Combinational constraints are supported.

The Graphical Relational Representation of Tables Dialog shows partial Entity – Relational Model of the Nomenclatures' Database, concerning the current table. The table with yellow background is the current table. If there are foreign key constraints in the table, the base tables of those constraints are also displayed with white background. The column with blue background is the main column of the table. The column with the key is the primary key ID column, which is automatically added to the table in the process of its creation.

In terms of the EMS Project, there are two distinct types of foreign keys: hierarchical and class defined. Hierarchical foreign keys form a hierarchy of nomenclature tables (for example: Country, Regions in Country, Cities in Regions, etc.). This foreign key type is specified using the EMS Relation Tool. The class defined foreign keys are defined by the Class Editor Tool. When you create a class by using the Class Editor, and you specify that it is a combo class and specify its class table, you create a class-defined foreign key opportunity. When you use the class as a column class of a table in EMS Relation Tool, you create class-defined foreign key. Both of the foreign key types are displayed in the Graphical Relational Representation of Tables Dialog. The main difference between those two foreign keys is that the Class-defined Foreign Keys are not used to form a hierarchy in The EMS Client Runtime Environment and the EMS Relation tool.

<DATA MANIPULATION DIALOG>

<>The Data Manipulation Dialog is accessible by clicking the File → Insert Record Dialog or by clicking the corresponding item in the toolbar. It has a built-in hierarchical functionality. For example, if you choose to manipulate data in a streets child table, you must first choose the city, if such a hierarchy exists.

Choose the table you want to manipulate, by selecting it in the combo box. If the table is a child table in a hierarchy, the whole hierarchy is shown above, as shown:

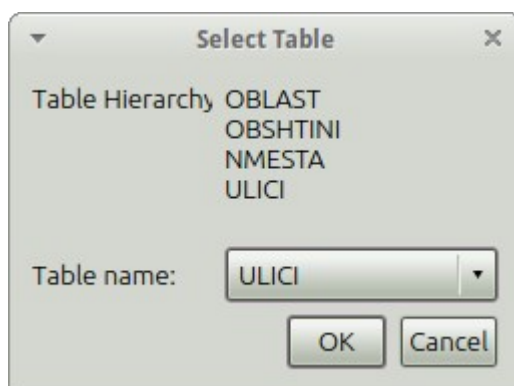


Figure 11: Automatic Hierarchy Recognition and Display

Click OK to proceed. A dialog like this appears:

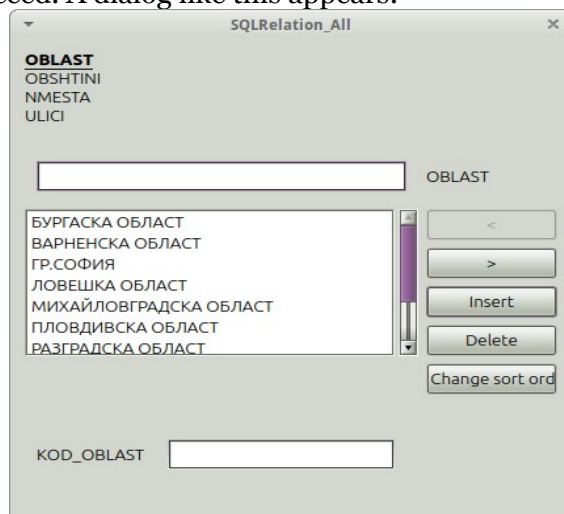


Figure 12: Data Manipulation Dialog

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To manipulate the child-most table in the hierarchy you should first select the value of the parent tables current items and click the Next (“>”) button. The current table in the hierarchy is underlined as shown in figure 12. You can change update, insert, delete any record anywhere in the hierarchy by clicking the corresponding buttons, after entering the data in the fields. If you change a base table base column of a hierarchical foreign key, you will get a cascade update warning for the child table. The deletion process is similar.

The main column of the table is shown above the list widget, which shows all records' main columns values. All other columns and their data manipulation fields are below it.

The button “Change sort order” changes the order from alphabetical to ID – ordered or vise versa.

<PREPARATION FOR NETWORK COMMUNICATION WITH BROKER>

<>In order to use this feature, you must run EMS Relation tool in a Cloud communication mode. To do that, you must put a file in its directory, named emsgini.xml with the following example content:

```
<MsgIni>  
<BrokerInfo>  
<IpAddress>127.0.0.1</IpAddress>  
<PortNumber>9999</PortNumber>  
</BrokerInfo>  
<CurrentLanguage>English</CurrentLanguage>  
</MsgIni>
```

Figure 13: Example content of emsgini.xml configuration file

IPAddr tag contains the IP address of the broker, Port Number contains the Client Service's Server Port of the Broker. In order the changes to take effect, restart EMS Relation. In order to proceed, you must select your department, and type your username and password, if you are a department administrator, or select "Cloud Admin Department" from the Departments List if you are a Cloud Administrator. On successful login the main form of EMS Relation appears.

<SEND TABLES TO BROKER>

<>Send Tables To Broker Dialog is accessible by clicking the Cloud Communication → Send New Tables To Broker.

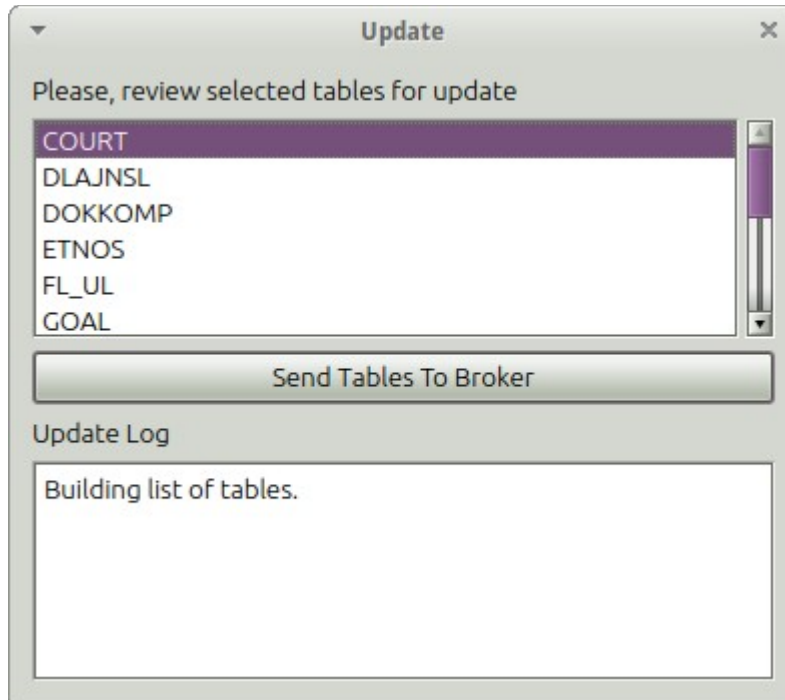


Figure 14: Send Tables To Broker Dialog

The Send Tables To Broker Dialog loads with a list with all of your local tables, which has all tables that should be sent to broker already selected. The Cloud Communication Subsystem of EMS Relation has its own version control system. All tables without remote (Broker) version information or tables with higher local version than remote are automatically selected for Update. If you want you can deselect some of the selected tables. Click the button "Send Tables To Broker". On successful completion all your new tables will be sent to broker and on next load of the same dialog, the tables that you have already sent will not be automatically selected.

<RECEIVE TABLES FROM BROKER>

<>Receive Tables From Broker Dialog is accessible by clicking the Cloud Communication → Receive New Tables From Broker.

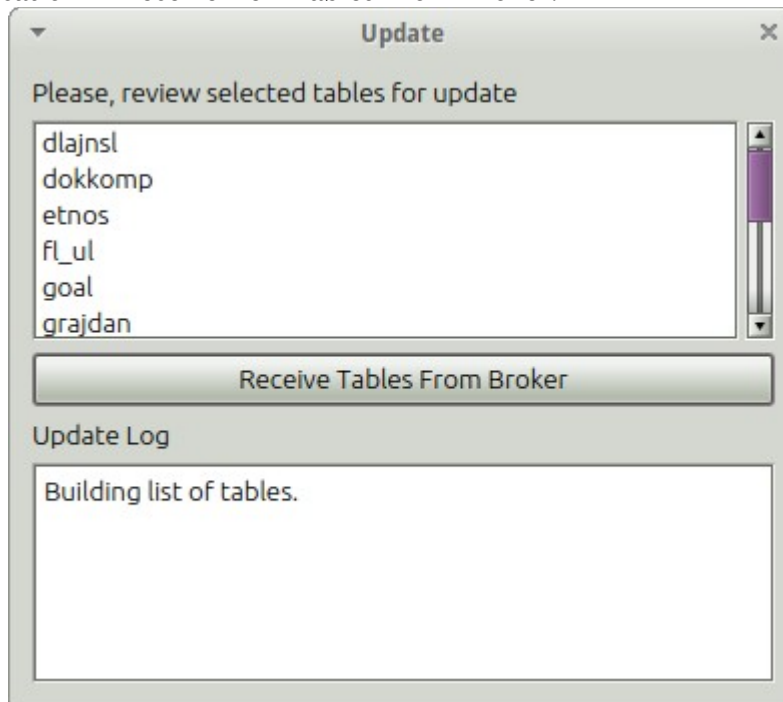


Figure 15: Receive Tables From Broker Dialog

The Receive Tables From Broker Dialog loads with a list with all of your remote tables, which has all tables that should be received from broker already selected. The Cloud Communication Subsystem of EMS Relation has its own version control system. All tables without local (Broker) version information or tables with lower local version than remote are automatically selected for Update. If you want you can deselect some of the selected tables. Click the button “Receive Tables From Broker”. On successful completion all your new tables will be received from broker and on next load of the same dialog, the tables that you have already received will not be automatically selected.